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Quinn IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER
AYALA DELGADO, ANTHONY

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte REBECCA J. DARR, PAUL JASINKIEWICZ, KYLE E. CRAWFORD, JASON DANIEL MULLINS, and MATTHEW KING

Appeal 2016-000451
Application 12/832,431
Technology Center 3700

Before: LYNNE H. BROWNE, ERIC C. JESCHKE, and BRENT M. DOUGAL, *Administrative Patent Judges*.

DOUGAL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from a final rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

CLAIMED SUBJECT MATTER

The claims are directed to a method of operating a vehicle under frozen diesel emission fluid conditions. Claim 1, reproduced below, is the sole independent claim and is illustrative of the claimed subject matter:

> 1. A method of controlling a vehicle that utilizes a diesel emission fluid stored in a tank, the method comprising:
>
> determining if the diesel emission fluid is at least partially frozen;
>
> determining if a controller of the vehicle is currently operating the vehicle in a low diesel emission fluid inducement protocol; and
>
> defining a temporary minimum diesel emission fluid mass with the controller to prevent initiation of the low diesel emission fluid inducement protocol by the controller when the controller of the vehicle is not currently operating the vehicle in the low diesel emission fluid inducement protocol, and when the diesel emission fluid is at least partially frozen.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Lecea	US 2005/0252201 A1	Nov. 17, 2005
Gschwind	US 2007/0157602 A1	July 12, 2007
Clingerman	US 2007/0298289 A1	Dec. 27, 2007
Huang	US 2008/0306631 A1	Dec. 11, 2008
Barcin	US 2009/0288734 A1	Nov. 26, 2009

REJECTIONS

Claims 1–3, 17, and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang and Barcin.

Claims 4–16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang, Barcin, and Clingerman.

Claims 11–18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang, Barcin, Clingerman, and Gschwind.

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Huang, Barcin, and Lecea.

Claims 1–9 and 11–15 are rejected under 35 U.S.C. § 101 as being directed to a judicial exception.[1]

OPINION

35 U.S.C. § 103(a)

The Examiner finds that "Huang discloses a method of . . . determining if the vehicle is currently operating in a low diesel emission fluid inducement protocol (Reductant-Low Engine Control Mode 508)." Final Act. 3. The Examiner further finds that Barcin teaches that "[i]f the level sensor indicates a value of no liquid, and temperature sensor is below a freezing point then the reductant is frozen." *Id.* Finally, the Examiner determines that "[i]t would have been obvious . . . to have modified the procedure of Huang . . . to include [measuring the] temperature condition of the tank which will determine if the reductant is frozen as taught by Barcin" "which would lead to heating the frozen reductant (thaw) which would yield obvious results of increasing the distance the vehicle can travel without operating in a low reluctant engine control mode." *Id.* at 4.

[1] The Examiner entered a new ground of rejection under 35 U.S.C. § 101 in the Answer. Ans. 2–5.

As noted by Appellants (Appeal Br. 5–10), the Examiner's initial rejection does not show how the combination of Huang and Barcin teaches or suggests the claimed step of:

> defining a temporary minimum diesel emission fluid mass with the controller to prevent initiation of the low diesel emission fluid inducement protocol by the controller when the controller of the vehicle is not currently operating the vehicle in the low diesel emission fluid inducement protocol, and when the diesel emission fluid is at least partially frozen.

This step is only addressed initially in the Examiner's Response to Arguments, where the Examiner argues that the step is taught because the combination "determine[s] if there is really reducing agent available." Final Act. 12. However, determining if reducing agent is available (i.e. frozen, but still present) is not the same as "defining a temporary minimum diesel emission fluid mass with the controller to prevent initiation of the low diesel emission fluid inducement protocol by the controller" as claimed.

The Examiner later elaborates that the combination "would result in defining a temporary mass (frozen mass) that would avoid raising a set reductant low limit flag if the frozen mass is present." Ans. 8. This is because:

> if diesel emission fluid (reductant agent) is frozen then with the aid of the level sensor to heat the frozen fluid until its liquid form and the level sensor can sense an amount (temporary minimum diesel emission fluid mass) fluid that was frozen. Hence to define the mass would need to heat the mass to liquid form, as disclosed by Barcin.

Id. at 9.

Though the combination may determine whether there is frozen reductant present, and it is possible to calculate the difference in the tank

level between when the reductant was frozen and after it is melted, this is not the same as "defining a temporary minimum diesel emission fluid mass with the controller to prevent initiation of the low diesel emission fluid inducement protocol by the controller." The Examiner's rejection does not fully address this limitation of the claim nor does it provide a rationale with a reasonable basis for why it would be obvious in view of the prior art. For this reason, we do not sustain the Examiner's obviousness rejection of claim 1. We do not sustain the Examiner's obviousness rejections of dependent claims 2–20 for this same reason.

35 U.S.C. § 101

The Examiner determines that claims 1–9 and 11–15 "are directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea)" and are therefore non-statutory subject matter. Ans. 2. The Examiner determines that the claimed method is "merely an algorithm of abstract instructions in which measured or defined values and conditions are compared within a controller to determine a condition." *Id.* at 5. The Examiner further determines that "[t]he claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception." *Id.*

The Supreme Court has set forth "a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (2012)). Under that framework, we first "determine whether the claims at

issue are directed to one of those patent-ineligible concepts"—i.e., a law of nature, a natural phenomenon, or an abstract idea. *Id.* (citing *Mayo*, 132 S. Ct. at 1296–97). If so, we must secondly "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo*, 132 S. Ct. at 1298, 1297).

Under the first step of the *Alice* framework, the Examiner finds that the claim is directed to an abstract idea where "[t]he method comprises steps in a program" including "data gathering," "an abstraction . . . performed through an algorithm by a series of mathematical relationships between measured and threshold values," and "an abstraction of setting a value associated with the 'fluid mass.'" Ans. 2–5 (citing Spec ¶¶ 9, 12, 14–16, 20, and 21).

Appellants do not contest the Examiner's finding under the first step of *Alice* that claim 1 is directed to an abstract idea. *See generally* Reply Br. 2–3. Thus, we are not informed of error in the Examiner's determination that the claim is directed to an abstract idea.

At the same time, "'a process is not unpatentable simply because it contains a law of nature or a mathematical algorithm.'" *Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (quoting *Parker v. Flook*, 437 U.S. 584, 590 (1978)); *see also Mayo*, 132 S. Ct. at 1293. "[A]n application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187; *see also Mayo*, 132 S. Ct. at 1293–94.

Therefore, the claims must be analyzed under the second step of *Alice*. The Examiner determines that "the claims as a whole do not amount to

significantly more than the abstract idea itself." Ans. 5. However, in making this determination, the Examiner only addresses the claim elements in generalizations. *See id.* Thus, we agree with Appellants "that the Examiner has failed to properly consider . . . the claim elements . . . as an ordered combination" and whether "improving the functionality of a vehicle that uses a diesel emission fluid stored in a tank, when that diesel emission fluid is frozen" is patent-eligible and makes the claim more than just an abstract idea. Reply Br. 2–3.

Similar to *Diehr*, claim 1 is directed to more than just a mathematical formula, but rather "integrate[s] the equation into the process as a whole." *Mayo*, 132 S. Ct. at 1298 (discussing *Diehr*). The process is directed to "controlling a vehicle that utilizes a diesel emission fluid stored in a tank." In addition to the determining steps and "defining a temporary minimum diesel emission fluid mass," the claim also requires "prevent[ing] initiation of the low diesel emission fluid inducement protocol [in the vehicle] by the controller when the controller of the vehicle is not currently operating the vehicle in the low diesel emission fluid inducement protocol, and when the diesel emission fluid is at least partially frozen."

> And so the patentees [do] not "seek to pre-empt the use of [the] equation," but s[eek] "only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process." These other steps . . . transform[] the process into an inventive application of the formula.

Mayo, 132 S. Ct. at 1298–99 (quoting *Diehr*, 450 U.S. at 187).

Thus, we do not sustain the Examiner's rejection of claims 1–9 and 11–15 as being drawn to non-statutory subject matter.

DECISION

The Examiner's rejections of claims 1–20 are reversed.

REVERSED